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Validating Measures of Teacher Stress

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Abstract

This paper reports the results of a known groups validation study of several measures of teacher stress. Role-related stress, task-based stress, and environmental stress comprised the stress measures. Groups of teachers in high schools and junior high schools were selected on an a priori basis using administrative records of reported student discipline as the criterion. These teacher groups were then given a pencil and paper measure containing the three major stress variables and additional stress-related variables. Four research questions were addressed: The internal consistency of the teacher stress measures, the structural reliability of the measures, the predictive validity of the measures, and the construct validity of the measures of teacher stress. Other heuristic findings regarding the teacher stress phenomenon are discussed and substantive directions for future research are outlined.

Validating Measures of Teacher Stress

Introduction

Stress is increasingly becoming a recognized occupational hazard of the teaching profession. Recent accounts in the news media, concern by professional teachers' associations, a proliferation of stress management seminars and the like all underscore a nation-wide interest in teacher stress. Unfortunately, popular interest has outpaced substantive empirical research on this subject and the teacher stress phenomenon remains vague.

The research presented here constitutes a validation study in the development of empirical measures of teacher stress. It represents a survey approach to measuring various aspects of the teacher stress phenomenon. Three kinds of stress were investigated: role-related stress (Kahn, Wolf, Quinn, Snoek & Rosenthal, 1964), task-based stress (Tung & Koch, 1980), and environmental stress—that experienced at the organization-wide level (Pettegrew, Thomas, Ford & Raney, 1981). A "known groups" research design (Campbell & Fiske, 1959) using teachers from a priori selected high and low stress junior and senior high schools was employed. Two procedures for testing the reliability of the measures are reported along with predictive tests of discriminant and construct validity. In addition, the predictive relationships between task, role and other stress-related variables to environmental stress is explored. Recommendations for further research and intervention are made.

Rationale

The subject of work-related stress has received increasing attention on several fronts. Federal and state policy makers are recognizing the negative

effects of work stress on the human resource. Counselors and therapists are reorienting their practices to accomodate an increasing client load of individuals who report negative effects from work stress. Researchers in the areas of organizational behavior and social psychology are amassing a credible body of empirical evidence which begins to uncover major factors in work-related stress and their effects on the organization, worker output, and the physical and emotional well-being of the worker and his/her family.

The majority of studies on work-related stress have been confined to industrial organizations within the private sector. There is, however, increasing speculation that stress may be particularly prevalent among the human service professions(Appelbaum, 1981; Cherniss, 1980; Copper & Marshall, 1980). Representative of this concern is the mounting speculation that stress within the teaching profession is considerable and may have far reaching consequences for the entire public education system (Kryiacou & Sutcliffe, 1977; NEA, 1967; 1979).

Previous Research

Previous research on teacher stress has viewed the phenomenon from three conceptually distinct vantage points: task-based stress, role-related stress, and work events stress. Task-based stress concerns problems associated with a variety of specific tasks which the teacher must perform in his/her teaching role. Work events stress is associated with specific circumstances or events which may befall a teacher during the course of his/her professional career. Role-related stress concerns the degree of fit between a teacher's expectations of his/her teaching role and the actual work-related experience of fulfilling that role.

Task/event stress. Amid the largely rhetorical reports on teacher stress, there is little empirical evidence to assist us in reaching a comprehensive understanding of the phenomenon. Chichon & Koff (1978) employed a research analog to the "life events inventory" used by Holmes & Rahe (1967) to uncover a list of most stressful events for teachers. Most troublesome among teaching events were involuntary transfer, dealing with disruptive students, notification of unsatisfactory work performance, and being physically threatened by students.

Olander and Farrell (1970) used a similar approach in having teachers rate teaching problems which presented the most difficulty to them. Finding time for individual/remedial work, working without having a daily class preparation period, and obtaining additional resources for extra classroom aids were the most difficult teaching problems.

The National Institute of Education conducted a study that asked teachers to rank order problems which hindered the quality of their service. Student discipline, student attitudes, incompetent administration, heavy work loads, and lack of resources hindered teacher service the most (Golladay & Noel, 1978).

Wilson (1980) surveyed elementary, middle, and special education teachers according to the stressfulness of a number of school-related tasks. He found that time management, interpersonal conflicts, parent/student relations, and physical/psychological symptoms of stress were consistently ranked as most troublesome by teachers at all three levels.

A number of studies have given rather close examination to the anxieties (or anticipated stress) among student teachers. Thompson (1963) surveyed student teachers at various levels using a 35-item inventory of anxiety-provoking events or circumstances. The respondents were most anxious about: mastery of subject, making lesson plans, pupil reaction, teacher standards, inability to answer questions, and student discipline. Fuller (1969) reviewed

10 studies of student teacher concerns which took place over thirty-six years and involved diverse populations (including research from England). The author reports that there was an appreciable degree of consistency despite the population heterogeneity. Classroom control, student discipline, their own knowledge adequacy, and evaluations of them by students and administrators consistently emerged as topics of greatest concern among student teachers.

Role-related stress. Besides the tasks teachers must perform and the events which they experience, job-related stress may accrue from the roles which they must execute. Kahn, Wolf, Quinn, Snoek, and Rosenthal (1964) view role stress as the discrepancy between individual role expectations and their actual experience of that role. As such, it is intimately tied to administrative/management practices; it is management's job to assist workers in achieving a good person-environment fit. Even fewer students have examined role-related stress among teachers. Tosi and Tosi (1970) examined role conflict and role ambiguity among a teacher population and found that both role stressors have a significant impact on teacher turnover. An even more comprehensive study by Aaron (1976) looked at role conflict and role ambiguity among other social-psychological correlates of teacher absenteeism. Role conflict prominently emerged as a strong correlate of absenteeism. Aaron (1976) and Edgerton (1977) go on to hypothesize that conflict may be inherent in the teacher role where so many contradictory forces must be both integrated and acted upon. Phillips and Lee (1980) support the inherent conflict within the teacher role and suggest a plethora of sources of teacher conflict. A related line of research in England has also demonstrated the prevalence of role-related stress among teachers, particularly role conflict (Dunham, 1976; Grace, 1972; Hoyle, 1969). Jackson (1968, 1971) and Lortie (1975) report data which suggests that role ambiguity may be a pervasive part of the teacher's career experience—an endemic uncertainty in what they are doing.

In a large study of school administrators in the state of Oregon, Tung and Koch (1980) studied the effects of both role-related and task based stress¹ on

self-reports of global physical health. The largest effect on reported physical health was due to difference on task-based stress. While this study does not deal with teachers directly, there is considerable overlap between teachers and their school administrators: both groups are members of the teaching profession, they share the same organizational affiliation and the same work environment, and they must deal with many of the same problems, albeit from a different role and perspective.

Summary. The above research on teacher stress reveals considerable heterogeneity in methods, populations, and the conceptual nature of stress. In spite of this diversity, three sources of stress appear to obtain for the teaching profession: role-related stress, task-based stress, and teaching events stress. Of the three conceptual domains, teaching events stress appears to be the most problematic for several reasons. First, it is not clear that teachers perceive teaching events distinctly from role-related pressures and the associated tasks they must perform in their work-a-day world. Second, teaching events likely have an ephemeral or unreliable effect on teachers. In some instances, one could conceivably work an entire career without experiencing many of the events listed in this conceptual domain. Finally, there appears to be an implicit assumption of additivity in this concept. Like the life-events stress concept (Holmes & Rahe, 1967) from which this was adopted, one must assume that degree of stress is a function of the number and mix of teaching events. Unfortunately, no clear-cut data is presented to support this additivity assumption. It was, therefore, decided to overlook this stress concept in favor of role-related and task-based stress.

Both role-related and task-based stress offer more stability and substance from an administrative intervention standpoint. For example, role-related stress is directly tied to organizational effectiveness and management practices (Kahn, et al., 1964). Task-based stress reflects directly on educational policy, the working environment, and support systems (both social and resource). While some of the studies cited above look at either role or task stress among teachers, no study to date has integrated the two major sources of stress into a comprehensive study like that done on school

administrators (Tung & Koch, 1980). In addition, the role studies have focused exclusively on role conflict and role ambiguity to the exclusion of other role-related stressors which the literature suggests may be an important part of the role stress domain. For example, research by Hamner and Tosi (1974) and Rizzo, House, and Lirtzman (1970) indicates a strong but not redundant relationship between role conflict, role ambiguity and the degree of role participation. Tracy and Johnson (1981) report a study which examined the Rizzo, et. al, (1970) instrument and found that it might be measuring concepts other than ambiguity and conflict. MacKinnon (1978) did a factor analytic study of the Job Related Tension Index (JRT) by Kahn, et al. (1964) which included role overload in addition to conflict and ambiguity. He reported factor spillage among the items and found a role competency factor in addition to conflict, ambiguity, and overload.

In essence, previous empirical research on teacher stress suffers from three major issues. First, there has been no integration of role-related and task-based stress into an investigation of a teacher population. Second, in the research that utilized role-related stress, only ambiguity and conflict were included thus providing only a fragmented picture of role-related stress. Third, there has been no attempt to measure stress associated with the global school environment.

Research Questions

The purpose of this research was to test the reliability and validity of measures of teacher stress adopted from previous research performed by the author and his colleagues in a different work setting (Pettegrew, Thomas, Costello, Wolf, Lennox, & Thomas, 1980; Pettegrew, Thomas, Ford, & Raney, 1981) and from research on school administrators (Tung & Koch, 1980). Four questions regarding the instrument's reliability and validity are addressed:

1. What is the internal consistency of the measures (as determined by Chronbach's alpha)?
2. What is the structural reliability of the measures (as determined by a comparison of the data structures representing a teaching and health

care organization setting)?

3. What is the predictive validity of the measures (as determined by the ability of these measures to significantly differentiate between a priori selected high and low stress teacher groups as represented in a known groups research design)?
4. What is the construct validity of the measures (as determined by their relationship with measures of job satisfaction, social support, illness symptoms, and other previously established stress-related variables)?

Methods

In order to provide a proper test of the validity of the measures of teacher stress, a known groups design was employed. This design is intended to demonstrate the ability of a measure or measures to discriminate known groups which have been distinguished a priori according to a related criterion (Campbell & Fiske, 1959). For the purposes of the present research, two groups of teachers were selected according to the stress-related criterion, "incidence of student discipline." As indicated in the review of the literature of both research and anecdotal accounts of teacher stress, student discipline emerges as the most consistent and troublesome aspect of teaching.

Subjects

All subjects were full-time teachers (no teacher aids or assistants) within a metropolitan public school system in the Southeast. The researchers entered this school system working closely with both the district superintendents and the director of research and evaluation. Records of reported student disciplinary action were obtained for all schools in the system. Ratios of total disciplinary

action were obtained for all schools in the system. Ratios of total disciplinary action to number of students in each school were computed. It became evident that there was not enough variation in disciplinary action at the elementary school level to make an adequate distinction between high and low stress schools and this level was dropped from the research plan.

Junior and senior high schools were ranked according to their student discipline ratios and those with the four highest and four lowest ratios were considered for inclusion in the study.² The researchers then utilized the knowledge of both superintendents and the director of research and evaluation to select the two most representative junior and senior high schools for the high and low stress groups. In some cases, a school would be under so much stress as to make their voluntary cooperation highly unlikely. In other cases, a new principal had taken over and conditions represented by student discipline records from the previous year were no longer representative. A consensus was finally reached on two high stress junior and senior high schools and their low stress counterparts.

Since groups of teachers rather than individuals were the unit of analysis the researchers decided to exclude any school which had less than a 60% response rate. It was felt that any lower response rate would not be truly representative of the teachers in that school. Seven of the eight schools met this criterion and had response rates equal to or greater than 70%. The average response rate among these seven schools was 78%. A high school in the low stress group had a response rate of 20% and was therefore excluded from the analysis. A total of 264 subjects made up the entire teacher sample used in the data analysis.

Data Collection Procedures

The researchers gained entrée into the target schools via introductions from the respective district superintendents. Each principal was advised of the nature of the study and that their participation and that of their teachers would be strictly voluntary. Full cooperation and support was obtained from seven of the eight schools.

The researchers were invited to a faculty meeting at which time they presented the broad intentions of the study and solicited the cooperation of school faculty. In most cases, the faculty completed the measures during that faculty meeting. In two cases, faculty were allowed to complete the measures within a two-day period and return the completed forms to the principal's office in an unmarked sealed envelope.

All data was collected during a three week period in April, 1981. This was approximately one month before the end of the school year. The results for each participating school has since been fed back to all participants in teacher in-service training sessions.

Measures

Role-related stress. Five variables represented by five items each were used to measure role-related stress: Role Conflict, Role Ambiguity, Role Overload (Kahn, et al., 1964), Role Preparedness (MacKinnon, 1978), and Nonparticipation (Beehr, Walsh, & Taber, 1976; Vroom, 1963). Role conflict involves the presence of two or more work demands which are incompatible. Role ambiguity concerns the absence of clear or adequate information regarding the role one must perform. Role overload denotes the absence of sufficient resources to perform one's role in an adequate manner. Role preparedness represents stress due to feeling a lack of competency or preparation to perform a given role.

Nonparticipation concerns not being directly involved in the decisioning process on issues which specifically affect one's work.

Environmental stress. A second kind of teacher stress concerning stress at a more general, environmental level was measured. Elsewhere, the researchers have expressed the fact that most role-related stress research is confined to stress at only the individual role level. This stands in contrast to theoretical notions of work stress which strongly suggest that the global environment, itself, can be very stressful (French, Rogers, & Cobb, 1974; Selye, 1976). From an intuitive standpoint as well, we have all entered environments where we could figuratively "cut the atmosphere and tension with a knife." The variable School Stress asked teachers to assess, in this global manner, the amount of perceived stress in the school environment in which they worked.

Task-based stress. Although task-based stress is virtually impossible to measure in some complex and heterogeneous work settings (medical centers or large, diversified corporations), the homogeneity of the school environment lends itself well to measuring task-based stress. Nine items, or individual teacher tasks comprise the Task Stress variable. Three of those nine items were adapted from the work of Tung and Koch (1980, p. 71-72). The remaining items were adapted from group sessions held with teachers. These sessions will be detailed in a subsequent section. In addition, their correspondence to previous research on teacher stress at the task level has been closely verified (Fuller, 1969; Golladay & Noel, 1978; Olander & Farrell, 1970).

Stress-related variables. In order to help determine construct validity for the measures of teacher stress, several additional variables were measured. Previous research has demonstrated the importance of these variables to the

job-related stress phenomenon. They are: Management Style which concerns management practices on a continuum from delegative to directive in valence (Likert, 1961; Taylor & Bowers, 1972), Job Satisfaction and Life Satisfaction which respectively are global measures of well being at work and surrounding life in general (Quinn & Shepard, 1974), Social Support comprising support from peers and from supervisory personnel (Caplan, Cobb, French, Harrison, & Pinneau, 1975; Caplan Robinson, French, Caldwell, & Shinn, 1976; House, 1981), and Illness Symptoms which are the reported presence of certain stress-related psychosomatic symptoms in the individual teacher (Indik, Seashore, & Slesinger, 1964). Five items comprise each of these stress-related variables.

Adapting the measures. Weisbord and his colleagues have provided cogent arguments that medical centers are very different organizational entities than industrial and manufacturing concerns and that there should be great caution exercised in generalizing both theory and research from one setting to the other (Weisbord, 1976; Weisbord, Lawrence, & Charns, 1978). The researchers thus felt the need to adapt the existing measures of job-related stress (developed for use in a medical center organization) to the teaching context.

The researchers composed a list of all role and task stress items and presented them to large group sessions of teachers involved in continuing education programs. The teachers were instructed to read each item carefully and judge its applicability to the teaching setting. They were asked to make any revisions they felt were warranted in the content or wording of the items. The items were also listed under the relevant variable heading so that the teachers could judge the items in relation to the concept they were to represent. The results from approximately 50 teachers at all teaching levels were analyzed and incorporated into the rewording or adapting of the original items. The exact wording of all items adapted for teacher stress are contained in Appendix A. All items were

measured on a six point Likert scale ranging from strong agreement to strong disagreement with each item statement.

Results

The first necessary but not sufficient condition of a measure's validity is its reliability. In research situations where there is no possibility of collecting longitudinal data, internal consistency as measured by Chronbach's alpha is the most straight forward approach (Allen & Yen, 1979). Coefficient alpha offers the researcher a good estimate of reliability since the major threat to reliability (source of measurement error) comes from the sampling of content for the construct under investigation (Nunnally, 1978).

Table 1 provides the coefficient alphas for each of the variables used in this study. The reliability subprogram in the SPSS package was used to generate these results (Nie, Hull, Jenkins, Steinbrenner, & Bent, 1975). By inspecting the coefficient alphas in Table 1, it is apparent that nearly all variables possess good internal consistency. The only exception is Role Preparedness which has a relatively low alpha ($< .60$). These results are even more compelling given the small number of items representing each variable.³

Structural Reliability

Traditional assessments of reliability are being challenged as data sets become increasingly complex. In the same vein that multivariate statistics have supplanted univariate analyses, so, notions of reliability have become more sophisticated so as to better represent the complexity of current measures of social/psychological constructs. Basically, as the number of items, variables, and dimensions of a data set increase, there is greater chance of the researcher getting a distorted or partial view of the data with univariate analyses (Nunnally, personal communication; Tatsuoka, 1970).

As a second check on the reliability of the teacher stress measures, structural reliability was assessed. Structural reliability concerns the degree to which the structure or variable interrelationships can be replicated in other contexts or settings. For example, if the structure of the variables in the Locus of Control construct remained relatively stable across a general, organizational, and health context, good structural reliability would be demonstrated. The principal author has used this technique in previous research on the Communicator Style construct judging its structural reliability across a general and therapeutic context (Pettegrew & Thomas, 1978). Similar use of confirmatory structural analysis is reviewed by Hubert and Subkoviak (1979).

Structural reliability is the degree of correspondence between the data structures of the same variable set used in different contexts. For the present research, it was decided to compare the teacher stress data structure with that generated in a study of stress in a large southeastern medical center. The first step in this analysis is to generate separate structural solutions to each data set. At this point, the researcher can utilize either a metric approach (such as factor analysis) or a nonmetric approach. Confirmatory subroutines are presently available in both. The researchers decided to proceed with a nonmetric approach for two reasons. First, there is some evidence that the particular nonmetric approach available to the researchers (Smallest Space Analysis) provides a more parsimonious structural solution than factor analysis (Bailey, 1974). Second, this analysis package was more readily accessible to the researchers.

Smallest Space Analysis (SSA-I) is a data reduction technique whose object is to map a set of variables or objects into a set of points in metric space so as to accurately reflect the underlying organic relationships among the variables (Lingoes, 1973). The closer the variables are mapped together, the stronger their

relationship. Figure 1 presents the optimal SSA-I solution to the teacher stress variable set which necessitates three dimensions. It should be noted that the task stress variable was not included in this analysis because there was no such variable in the medical center stress data set. Its inclusion would have prevented structural comparisons.

Insert Figure 1 about here

The interpretation of this SSA-I solution will be discussed in more detail in the section on construct validity.

A similar solution was obtained for the medical center stress data set. The researchers then used both solutions as input for PINDIS, a subroutine of SSA. PINDIS compares structural configurations by expanding and rotating each solution to obtain the best possible combined fit (Lingoes, 1973). Once this optimal fit has been achieved, the subroutine outputs a correlation coefficient for each dimension of the tested solutions. PINDIS also plots the tested configurations together in multidimensional space to provide a graphic representation of their similarity.

The correlation coefficients for each given dimension of the tested solutions are roughly analogous to coefficient alpha. Optimal structural reliability is indicated by dimensional correlations of .80 and above. The respective dimensional correlations from PINDIS are: .86, .90, .88. These correlations reveal a high degree of structural reliability among the stress variables across different work contexts. Figure 2 presents the teacher stress and medical center stress structural solutions plotted together in three dimensions. It is evident from this figure that both solutions are very similar along all three dimensions.

Insert Figure 2 about here

Predictive Validity

With both internal consistency and structural reliability having been determined, the researchers can now legitimately focus on questions of validity. The first validity issue concerns the measures' predictive validity. Predictive validity concerns a given measure's ability to predict some important behavior or condition external to the instrument (Nunnally, 1978, p. 87). This issue is especially crucial in applied research where the intent is to provide some type of policy or programmatic intervention based on the results of a measure. If the measures of teacher stress tested in this research are to prove useful in diagnosing problem levels of teacher stress, they must pass the test of predictive validity.

The procedure for testing predictive validity constitutes a direct correlation between the measures under scrutiny and the criterion variable (Nunnally, 1978). In the present research, the correlation between the stress measures and the high and low stress a priori groupings will determine predictive validity. This issue, however, becomes complicated by the existence of multiple intervally scaled measures and a dichotomous criterion variable. To adequately take these conditions into account, a discriminant analysis was used.

A discriminant analysis forms $K-1$ linear combinations of discriminating variables (upon which the test groups will be differentiated) and assigns standardized discriminant coefficients to each, such that the multivariate combination (discriminant function) provides maximum separation among the test groups (Overall & Klett, 1972; Tatsuka, 1971). Discriminant analysis also

provides several very useful statistics for determining predictive validity. First, Chi-square is assigned to each function to determine its statistical significance in distinguishing the test groups. A canonical correlation is also assigned to each function and is a measure of association between a particular discriminant function and group membership. As such, it is roughly analogous to a point biserial correlation in that it provides an adequate measure of association between interverally and nominally scaled variables. Finally, standardized weights are given to each variable in the discriminant function which provides the researcher with an indication of the importance of each variable in discriminating the test groups.

Table 2 presents the results of a stepwise discriminant analysis using the role-related, task-based, and stress-related measures to predict the criterion variable of a priori high and low stress grouping.

Insert Table 2 about here

There are two pieces of evidence which support the predictive validity of the teacher stress measures. First, the discriminant function significantly differentiates the a priori high and low stress groups with a Chi-square value of 23.66 which is significant at the $p < .001$ level. Second, there is a reasonably large canonical correlation of .33 which demonstrates a moderate relationship between the variables in the discriminant function and the high/low stress groups.⁴

An additional feature of the discriminant analysis provides some heuristic information which extends beyond the issue of predictive validity. More specifically, it would be informative to understand which of the variables provide the best discrimination of the high/low stress groups. By inspecting the

standardized discriminant weights and their corresponding signs, we are given insight into this issue. The high stress group can be characterized by high job dissatisfaction and role overload. The low stress group characteristically has considerable supervisory support, and low levels of nonparticipation and role conflict.

Predictive relationships among stress variables. A final issue regarding the predictive validity of the teacher stress measures concerns the predictive relationship among the variables with school stress. It will be recalled that school stress concerns a global assessment of stress in the school environment. As such, it might legitimately serve as a dependent measure for assessing the relative impact of the role-related stress variables, task-based stress variables, and the other stress-related measures.

A Multiple Classification Analysis (MCA) was used to investigate the predictive relationships among the variable set and school stress. MCA is a form of regression analysis using dummy variables to take into account multicollinearity (the presence of correlated predictor variables). A key feature of the MCA is its ability to analyze the effects of each predictor variable both before and after taking into account the additive effects of all other predictor variables (Andrews, Morgan, Sonquist, & Klem, 1973). The eta-squared statistic represents the independent contribution of each predictor variable to the dependent measure. The adjusted R^2 statistic represents the cumulative variance accounted for in the dependent measure by the additive regression model. Table 3 presents the results of the MCA.

Insert Table 3 about here

Two findings are revelent to the predictive validity issue. First, the predictor variables account for an extremely large amount of variance in school stress (R^2 adjusted = .63). Second, many of the same variables which formed the best discriminant function for the a priori selected high and low stress groups reemerge in the MCA as best predictors of school stress. In other words, there is considerable association between school stress and the high/low stress groups in that a similar set of variables predict both dependent measures in separate analyses. In the MCA, we find job satisfaction, role overload, non-participation, and role conflict accounting for the greatest amount of variance in school stress.

From a hueristic standpoint, a second finding in the MCA is the superiority of the role stress variables over the task stress variables in predicting school stress. Recall that a study of school administrators by Tung and Koch (1980) demonstrated that task-based stress was a much stronger predictor of stress-related health outcomes than role-related stress. It is interesting to note that the task-based stress items of student discipline (Task 2) and participating in school activities beyond normal working hours (Task 8) were the strongest task predictors. Role conflict and role overload accounted for a much greater share of the variance. Finally, role ambiguity does not appear to be nearly so strong a predictor of school stress as previous research has suggested; this may have been due to the absence of other role stress measures in those analyses.

Construct Validity

The final issue in this validation study concerns the construct validity of the teacher stress measures. Construct validity entails the extent to which a construct or constructs of interest relate to similar constructs previously established in the literature (Nunally, 1978). A reasonably straightforward approach to determining the construct validity of a measure or measures is the

extent to which the construct(s) under investigation correlate positively with similar, previously established constructs.

In the present case, the researchers are interested in the relationship of the role-related, task-based, and environmental stress measures to job satisfaction, management style, illness symptoms, and social support (peer and supervisory). As previously indicated, these constructs have been empirically demonstrated to have a strong association with job-related stress. The extent to which they demonstrate a similar relationship to role and task stress will determine the construct validity of the measures of teacher stress. To analyze the statistical relationship between the domain of stress-related variables, SSA-I was used. Recall that SSA-I maps variables together in multidimensional space according to their degree of similarity. The extent to which they share essentially the same multidimensional space will determine the construct validity.

By inspecting Figure 3 we can obtain a graphic understanding of the variable interrelationships. It should be noted that this is a variation of the SSA-I in Figure 1. The fact that a majority of the role-related stress and task stress variables cluster closely together in multidimensional space provides good evidence for construct validity. The main exceptions to this description are illness symptoms, life satisfaction and peer support which tend to be outliers to the central stress cluster. In addition, the variable product moment correlat range from .22 to .74 all of which are significant at the $p < .001$ level. The magnitude of these variable relationships indicate strength without redundancy.

Conslusions

The present study provides convincing evidence that the measures reviewed herein provide a reliable and valid multivariate assessment of teacher stress. The measures of teacher stress, including role-related, task-based, and environ-

mental stress demonstrated good internal consistency. The structural integrity of the stress-related variable set (without task-based stress) remained intact across two very different work-related settings: a medical center organization and a metropolitan school district.

The measures of teacher stress also met the standards for predictive and construct validity. The measures of teacher stress combined in a discriminant function provided a statistically significant differentiation of a priori selected high and low stress groups of teachers. Considerable relatedness between the variable set and both school stress and the high and low stress groupings were also shown. Many of the same variables which made up the discriminant function separating high and low stress groups also were prominent predictors of school stress in an independent regression analysis. Finally, both the product moment correlations and SSA-I demonstrate a strong but not redundant relationship for role-related, task-based, and environmental stress with other stress-related variables. This provides convincing evidence for construct validity--that the stress variables share a similar domain with previously established stress-related variables.

Future Directions

While the stress measures considered here demonstrate good psychometric qualities, there are inherent limitations which must be addressed. First, the sample was limited to a metropolitan area in the southeast. Conditions and regional practices might limit the generalizability of the findings. Use of these measures in other areas or within rural school settings should be accompanied by readdressing reliability and validity issues.

A second limitation rests with the form of measurement itself. Pencil and paper instruments providing self-report data are only one of many useful tools

in social/psychological measurement. The use of the present measures should be accompanied by interview data, school absenteeism and turnover records, medical histories, and the like. It is likely that job-related stress can be most effectively measured with a variety of data originating from multiple sources—or method triangulation (Jick, 1979).

Finally, the data presented herein represents a single point in time. As such, the results are limited in the degree of complexity and generalizability within the selected population. Had the study been done at a different time during the school year (at the beginning rather than at the end) some of the results might have been altered. In addition, had a longitudinal study been conducted rather than a single data collection approach, the results might have been more stable or more representative of teacher stress throughout the school year.

These limitations should help guide future research on teacher stress. In spite of these limitations, however, this research has provided the first multivariate look at the teacher stress phenomenon. Besides providing essential information on issues of reliability and validity, the present study provides researchers with heuristic information that will help guide future efforts. Most prominent among the study's findings is the importance of role-related stress. It should be recalled that role-related stress is tied most closely to management practices. As such, management/school administration appears to be both the most logical and cost-effective point of intervention into teacher stress. This finding appears to stand in the face of many stress management programs which attempt to intervene by providing participants with more effective coping skills. Such skills may be helpful to teachers in dealing with many of the task-based problems about which they can do very little. It is reasonable to believe, however, merely coping with problems which school administrators can and should address will

eventually lead to frustration among teachers. As with organizations in general, public school systems and the teachers they employ would stand to benefit most in regard to stress intervention through the improvement of management practices. In schools where there are unique or extraordinary task-based problems, effective administrative practices might be supplemented with programs designed to help teachers develop more effective coping skills. The locus of teacher stress prevention/intervention most clearly rests with school administration.

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Footnotes

¹The authors also examined Conflict-Mediating Stress and Boundary Spanning Stress in this research. It was felt, however, that these two stress variables were much more pertinent to the administrative role than to the teacher role. For this reason, conflict-mediating and boundary spanning stress were not included in the present study of teacher stress.

²While "incidence of student discipline" has proven to be a necessary condition of teacher stress, it is doubtful that it is sufficient. There are a host of other factors which should be considered when trying to formulate a teacher stress criterion including teacher absenteeism and turnover rates, medical records, and the like. The researchers found that incidence of student discipline was also not a neat criterion. Many burned out teachers were reported to overlook student discipline problems and frequently have very few incidences of reported student discipline. The issue of a stress criterion measure for teachers demands considerable research attention in its own right.

³In the field of psychometrics, it is commonly understood that internal consistency is a result of two psychometric parameters: total number of test items that make up a scale and conceptual redundancy or the degree of shared variance. In the present research, neither of these parameters appeared excessive. All scales were composed of only 5 item and most of the inter-item correlations were in the range of .25 to .70 (thus not indicating interitem redundancy).

⁴While the canonical correlation does not indicate a dramatic relationship between the a priori groupings and the stress variables in the discri-

minant function, it is of sufficient magnitude for validation purposes. The group centroids provide additional evidence that the stress variables in the discriminant function do a good job of differentiating the high and low stress groups. As was discussed in footnote 2, the criterion of incidence of student discipline is not unequivocal. The results here suggest that it is a useful criterion and might be more useful in conjunction with other criterion measures which might be developed.

Table 1
Alpha Reliabilities for Teacher Stress Variables

Variables	α
Role Ambiguity	.79
Role Conflict	.82
Role Overload	.76
Role Preparedness	.57
Nonparticipation	.76
School Stress	.89
Management Style	.74
Job Satisfaction	.86
Life Satisfaction	.91
Supervisory Support	.89
Peer Support	.84
Task Stress	.84
Illness Symptoms	.82

Table 2
Discriminant Analysis of High-Low Stress Teacher Groups
by Teacher Stress Variables

<u>Discriminant Function</u>	<u>Standardized Weights</u>	<u>Canonical Corr</u>	<u>X²</u>	<u>p</u>
Job Satisfaction	-.84	.33	23.66	.001
Role Overload	-.79			
Supervisory Support	.66			
Nonparticipation	.49			
Role Conflict	.41			
<u>Group Centroids</u>				
High Stress Schools	-.31			
Low Stress Schools	.40			

Table 3

Multiple Classification Analysis
Best Predictors of School Stress

Variable	r^2
Job Satisfaction	.47
Role Conflict	.46
Role Overload	.33
Task 2 (Student Discipline)	.27
Task 8 (Participate Beyond Normal Working Hours)	.25
Management Style	.24
Role Ambiguity	.23
Illness Symptoms	.22
Life Satisfaction	.21
Nonparticipation	.20
Task 7 (Routine Work)	.19
Task 3 (Comply with federal, state, school policies)	.18
Task 9 (Resolve parent-school conflicts)	.18
Task 5 (Provide quality education in decreasing financial support atmosphere)	.15
Task 6 (Keeping up with changing professional standards)	.15

 R^2 (adjusted) = .63

Figure 1
Three Dimensional Smallest Space Solution
For Teachers Stress Variables

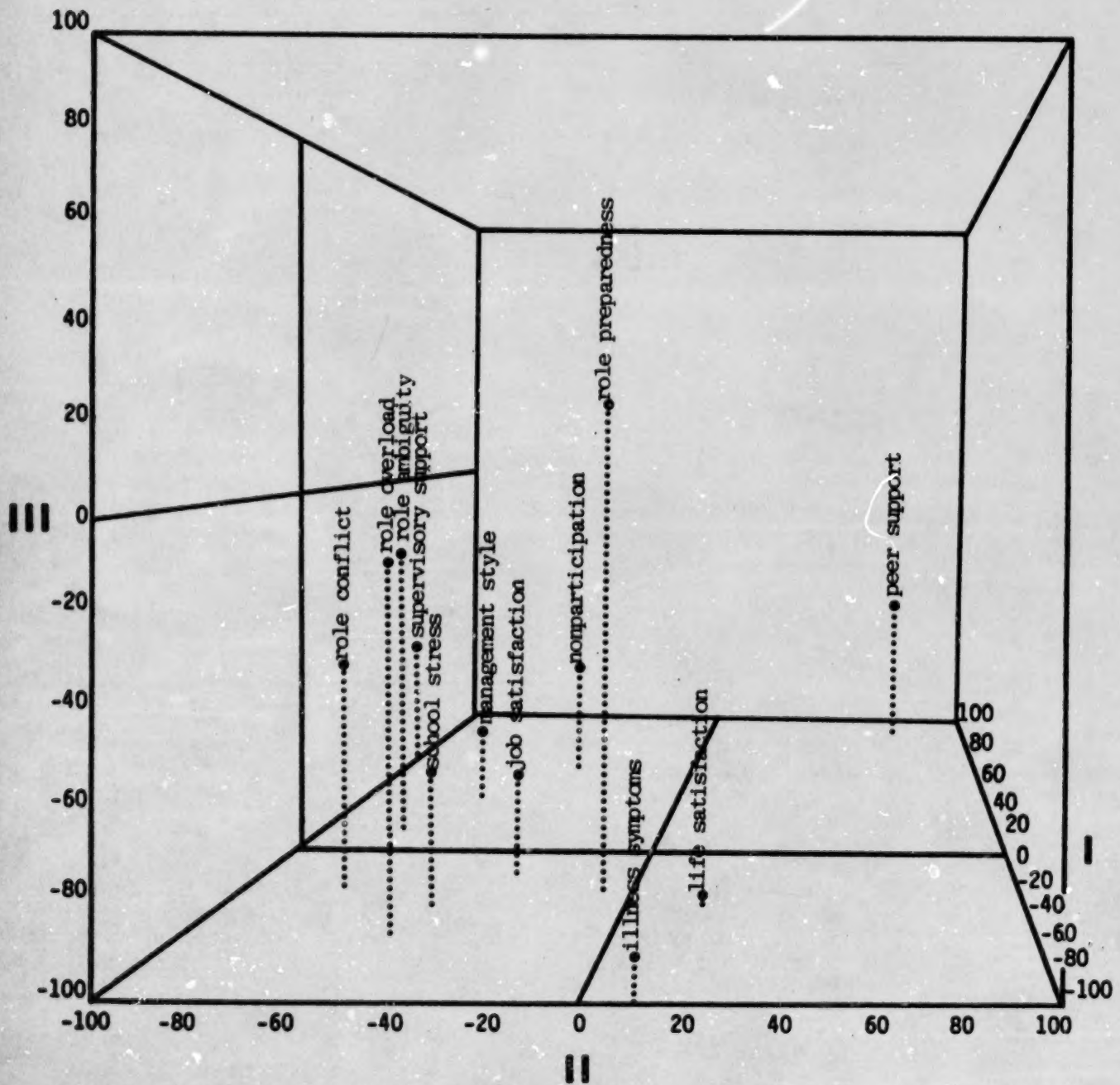


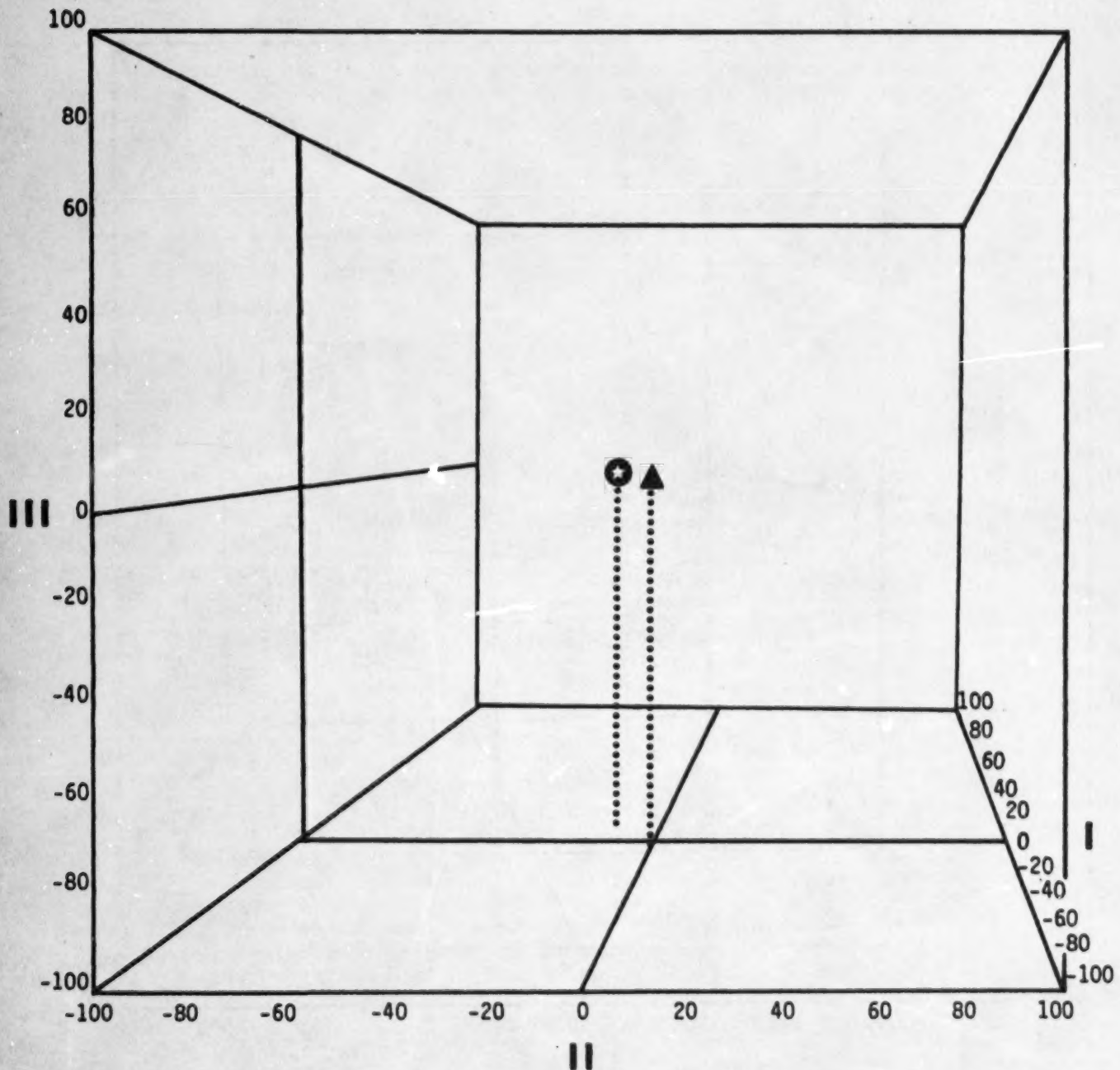
Figure 2

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Pindis Analysis of the Structural Similarity
of Stress Variables in Two Different Work Settings

Teacher Stress Solution★

Medical Center Stress Solution▲



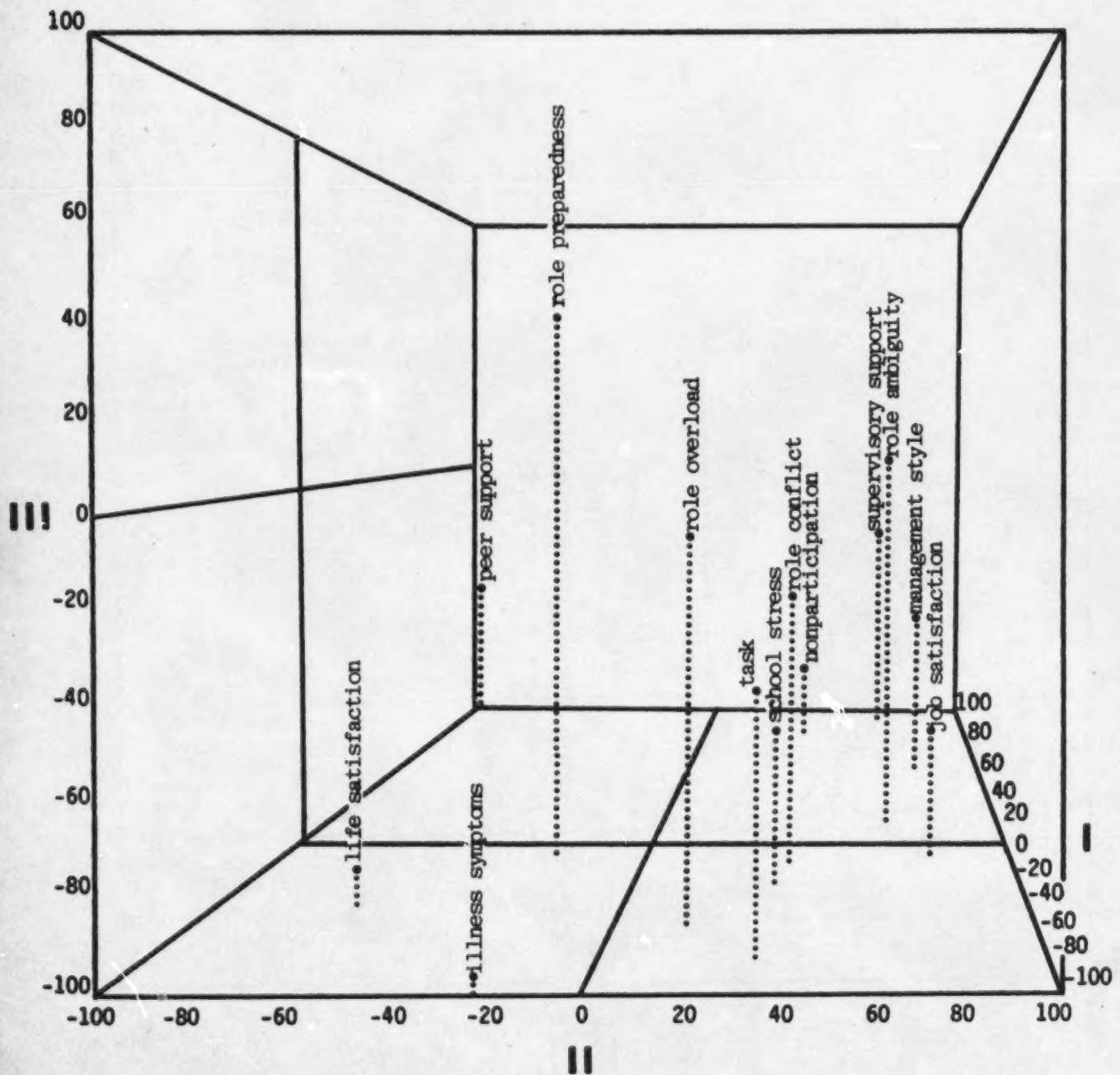
Dimension Correlations

I	II	III
.86	.90	.88

Figure 3

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Three Dimensional Smallest Space Analysis for Teacher Stress Variables



Appendix A

Role Ambiguity $\bar{X} = 2.3$ $SD = 1.0$

1. I can predict what will be expected of me in my work tomorrow.
2. I am unclear on what the scope and responsibilities of my job are.
3. I am uncertain what the criteria for evaluating my performance actually are.
4. I receive enough information to carry out my job effectively.
5. When asked, I am able to tell someone exactly what the demands of my job are.

Role Overload $\bar{X} = 2.9$ $SD = 1.2$

1. I feel that my job interferes with my family life.
2. I feel constant pressure from others to improve the quality of my work.
3. I find that I have extra work beyond what should normally be expected of me.
4. The criteria of performance for my job are too high.
5. I am given too much responsibility without adequate authority to carry it out.

Role Conflict $\bar{X} = 3.0$ $SD = 1.2$

1. I receive conflicting demands from two or more people or groups in the school setting.
2. I have to buck a rule or policy in order to carry out an assignment.
3. I have a hard time satisfying the conflicting demands of students, parents, administration and teachers.
4. I am given school-related duties without adequate resources and materials to carry them out.
5. There is a difference between the way my administrative head things things should be done and the way I think they should be done.

Nonparticipation $\bar{X} = 2.9$ $SD = 1.1$

1. My fellow faculty members and I regularly have time during school hours to discuss job-related issues.
2. I have influence over what goes on in my department/school.
3. I'm kept informed of important things that are happening in my department/school.
4. My administrative head asks my opinion on decisions that directly affect me.
5. I feel that it is useless to make suggestions about my work because decisions are made regardless of my attempts to influence them.

Role Preparedness $\bar{X} = 2.5$ $SD = .81$

1. The teacher training I received was inadequate to enable me to perform my job effectively.
2. I'm prepared to carry out all of the school assignments I receive.
3. I often feel that others have to help me if I am to get the job done properly.
4. I am able to quickly adapt to the changing pressures and situations at work.
5. My fellow faculty members feel that I am capable of performing my job well.

School Stress $\bar{X} = 3.7$ $SD = 1.4$

1. There is a lot of strain on most faculty working in my school.
2. The people I work with at school feel frustrated in trying to do their jobs.
3. I would definitely say that any school is a stressful place for faculty to work.
4. I would describe my school as a tightly wound spring ready to explode.

Job Satisfaction $\bar{X} = 2.8$ $SD = 1.2$

1. All in all, I would say that I am extremely satisfied with my job.
2. My job is extremely important in comparison to other interests in my life.
3. Knowing what I know now, if I had to decide all over again whether to take this job, I would definitely do so.
4. In general, my job measures up extremely well with the sort of job I wanted before I took it.
5. If a good friend told me that (s)he was interested in taking a job here, I would have serious reservations about recommending it.

Management Style $\bar{X} = 2.5$ $SD = .96$

1. My administrative head allows me extensive freedom to plan and organize my own work.
2. My administrative head brings me together with other faculty in joint meetings to make decisions and solve common problems.
3. My administrative head gives me full information about the things which directly involve my work.
4. My administrative head always insists that I solve my own work problems but is available to advise me if needed.
5. My administrative head insists that I stick to my job and leave decision and planning to him/her.

Life Satisfaction $\bar{X} = 2.1$

SD = 1.0

1. I currently find my life very rewarding.
2. My life is currently quite lonely.
3. I currently find my life very enjoyable.
4. I currently find my life quite boring.
5. My life is currently very hopeful.

Task Stress $\bar{X} = 3.7$

SD = .98

1. Trying to complete reports and paper work on time causes me a lot of stress.
2. I find that dealing with student discipline problems puts a lot of stress on me.
3. Complying with state, federal and school rules and policies is very stressful.
4. I experience a lot of stress trying to resolve conflicts between parents and the school.
5. Trying to provide a good education in an atmosphere of decreasing financial support is very stressful.
6. There is a lot of stress just keeping up with changing professional standards.
7. Trying to keep my work from being too routine and boring puts a lot of stress on me.
8. Having to participate in school activities outside of the normal working hours is very stressful to me.
9. I find that trying to be attentive to the problems and needs of fellow faculty is very stressful.

Supervisory Support $\bar{X} = 2.0$

SD = 1.0

1. When you really need to talk to your administrative head (s)he is willing to listen.
2. My administrative head pays attention to what I am saying.
3. My administrative head stands up to outsiders for the people (s)he supervises.
4. When I have conflicts with parents or students my administrative head gives me the kind of support I need.

Peer Support $\bar{X} = 2.2$

SD = .97

1. When you really need to talk with someone, your fellow faculty members are willing to listen.
2. My fellow faculty members pay attention to what I am saying.
3. My fellow faculty members stand up for each other to outsiders.

Teacher Stress

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Illness Symptoms

$\bar{X} = 2.5$

$SD = 1.3$

1. I have trouble getting to sleep or staying asleep.
2. I worry a great deal about work.
3. I am troubled by headaches at work.
4. I experience stomach upsets.